

Influence of Turbidity on the Foraging Success of Brook Trout and Smallmouth Bass

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The impacts of sedimentation on stream habitat and the reproductive potential of fish have received much attention, but information on the effects of sedimentation and suspended solids on the individual is lacking. Brook trout (*Salvelinus fontinalis*) and smallmouth bass (*Micropterus dolomieu*) are top predators in many cold and warm water streams, and their habitats are easily influenced by the landuse practices of man. Individuals of each species were held in an artificial stream channel to test the effects of varying levels of turbidity on reactive distance, probability of prey recognition, and probability of successful foraging attempts. A video camera mounted above the artificial stream channel was used to observe and record feeding behavior. Three individuals of one of the species were tested at a time. This introduced competition between the fish and encouraged a strike by the first individual recognizing the prey. Thus a measurement of maximum reactive distance could be obtained. Each species was tested at turbidities ranging from 0 to 40 NTU's. Turbidity had a negative effect on the maximum reactive distance of both species with reactive distances at high turbidities being significantly lower than those in clearer water. The proportion of prey items recognized by each species also declined significantly with elevated turbidity, however, once a prey item was recognized, the probability of successfully capturing and ingesting that prey item did not change with turbidity. Encounter rates between predator and prey are a function of reactive distance. Decreased reactive distance in turbid water leads to fewer encounters between predator and prey. This could result in decreased growth rates of fish living in streams which have chronically turbid waters.